Abstracts

A New Termination Condition for the Application of FDTD Techniques to Discontinuity Problems in Close Homogeneous Waveguide

F. Moglie, T. Rozzi, P. Marcozzi and A. Schiavoni. "A New Termination Condition for the Application of FDTD Techniques to Discontinuity Problems in Close Homogeneous Waveguide." 1992 Microwave and Guided Wave Letters 2.12 (Dec. 1992 [MGWL]): 475-477.

It would be useful to avail a "general purpose" algorithm such as finite difference in the time domain to analyze discontinuity problems in classical waveguide. Its direct application, however, has been rendered difficult so far by the absence of exact termination conditions appropriate to the close waveguide environment. In the present contribution, a novel rigorous termination condition specific to homogeneous waveguide is introduced, that is based on the convolution proprieties of the modal characteristic impedance of the "accessible modes." This condition is straightforward to implement, as demonstrated by application to the nontrivial problem of a five cavity inductive post filter. Numerical results are compared to existing analytical and experimental data showing excellent accuracy.

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